

## Plant Propagation Protocol for *Wyethia mollis*

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2023/WYMO.pdf>



Source: Calscape



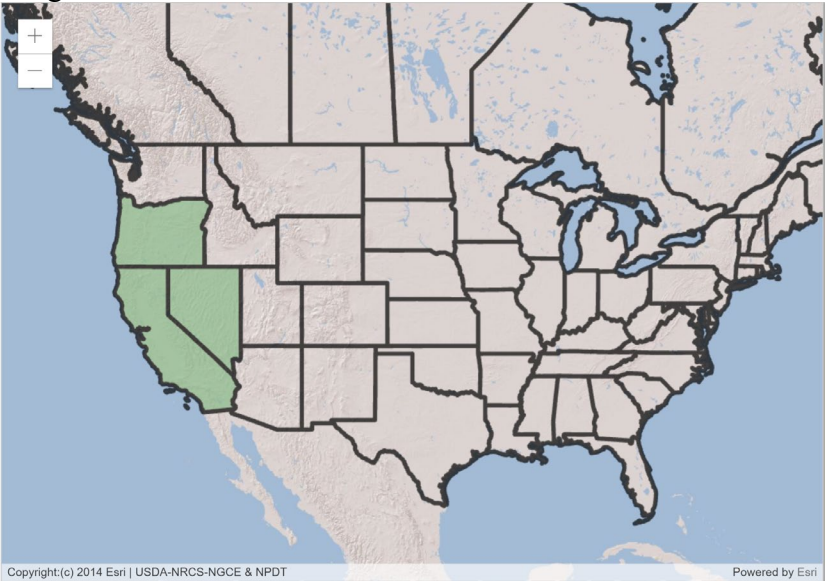
TAXONOMY	
<b>Plant Family</b>	
Scientific Name	Asteraceae
Common Name	Daisy
<b>Species Scientific Name</b>	
Scientific Name	<i>Wyethia mollis</i> A. Gray
Varieties	none
Sub-species	none
Cultivar	n/a
Common Synonym(s)	<i>Helianthus longifolius</i> , <i>Helianthus hookerianus</i> , <i>Helianthus robusta</i> , <i>Helianthus foliosa</i> , <i>Helianthus solanensis</i>  Source: Las Pilitas Nursery
Common Name(s)	Woolly Mule's Ear, Woolly Mule-ears, Woolly Wyethia, Mountain Mule Ears, Mountain Mule-ears.  Source: Calscape; Native American Ethnobotany DB.; Natural History Museum of Utah.

Species Code (as per USDA Plants database)	WYMO

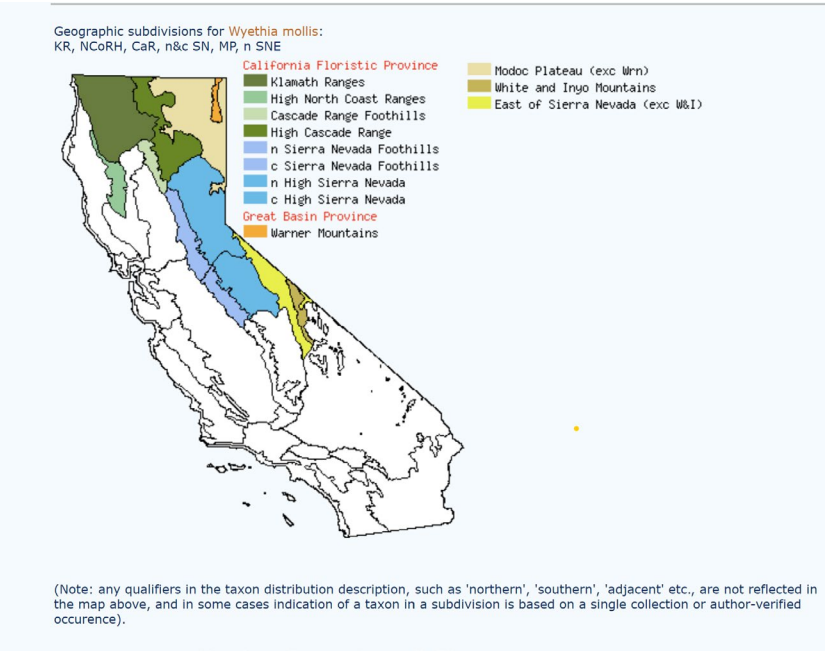
GENERAL INFORMATION

Geographical range

Wyethia mollis occurs mostly in the Eastern Sierra mountain range in CA with very limited distribution in Nevada and Oregon.



Source: USDA-NRCS



Above: Colors indicate geographic subdivisions within areas of distribution.

Source: Keil (2023).

Ecological distribution	<p>Plant tends to colonize open grassy meadows or recently burned areas.</p> <p>Source: Calflora; Keil (2023).</p>
Climate and elevation range	<p>USDA Zones 7-10.</p> <p>Mediterranean Climate with little to no rain during summer. Can handle very cold and snowy winters. Occurs in 4500-10600m above sea level.</p> <p>Source: Calscape; Plants for A Future.</p>
Local habitat and abundance	<p>Yellow Pine Forest, Red Fir Forest, Lodgepole Forest, Subalpine Forest.</p> <p>Source: Calflora; Keil (2023).</p>
Plant strategy type / successional stage	<p>Pioneer species often found colonizing open meadows or recently burned areas.</p> <p>Scholars/practitioners disagree over why populations occur this way: Riegel et. al. (2005) argue that <i>Wyethia mollis</i> limit shore pine growth in the area, while Las Pilitas nursery observes that trees appear to limit <i>Wyethia mollis</i>, with the latter eventually getting shaded out and displaced as shrub/tree species repopulate burned areas over time.</p> <p>Sources: Riegel et. al. (2005); Las Pilitas Nursery.</p>
Plant characteristics	<p>Upright perennial/forb which grows slowly up to 2.5' and is long lived. Plant will go dormant during winter and exhibits active growth during spring and summer. It has large, oblanceolate to widely obovate, basal leaf blades that are covered in coarse hairs that give them a 'woolly' appearance. Produces single, bright yellow flowers from May-July.</p> <p>Sources: Calflora; Calscape; Las Pilitas Nursery; Natural History Museum of Utah;</p>

## PROPAGATION DETAILS

Note: Due to limited information about *Wyethia mollis*, the following protocol utilizes propagule collection instructions and pre-planting treatments are drawn from Rose et. al.'s (1998) propagation protocol for *Wyethia amplexicaulis*. This species has similar form, habitat, and characteristics (e.g. tap root), though it is more widely distributed across the Pacific North West.

Ecotype	No information given
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	No information given
Time to Grow	No information given
Target Specifications	Well-developed crowns, roots and rhizomes filling soil profile in container.
Propagule Collection Instructions	Seed matures July-August and can be hand-collected by pulling the heads.
Propagule Processing/Propagule Characteristics	25,000 seeds per pound.  Clean seed by drying and fanning. Seed can be stored for up to five years.  Source: Lambert (2005); Rose et. al. (1998)
Pre-Planting Propagule Treatments	NPN-RNGR documents nearly any treatment will suffice while Calscape suggests cold stratification for 3 months and that no treatment may give satisfactory germination.  Rose et. al (1998: 58-59) note that although <i>Wyethia amplexicaulis</i> seed will germinate without treatment, germination will be enhanced through cold stratification at 2-4°C for four weeks. Diurnal temperatures of 10°C for 16 hours and 25°C for 8 hours will help maximize germination rate.  Sources: NPN-RNGR; Calscape.
Growing Area Preparation / Annual Practices for Perennial Crops	Long Ray leach containers.
Establishment Phase Details	No information given
Length of Establishment Phase	No information given
Active Growth Phase	No information given
Length of Active Growth Phase	No information given
Hardening Phase	No information given
Length of Hardening Phase	No information given
Harvesting, Storage and Shipping	No information given

Length of Storage	No information given
Guidelines for Outplanting / Performance on Typical Sites	No information given
Other Comments	
<b>INFORMATION SOURCES</b>	
References	
<p>Calflora: Information on California plants for education, research, and conservation, with data contributed by public and private institutions and individuals. [web application] 2023. Berkeley, California: the Calflora database. Available: <a href="https://www.calflora.org/">https://www.calflora.org/</a>. Accessed: 05/22/2023.</p> <p>Calscape. n.d. <i>Mule Ears, Wyethia Mollis</i>. Accessed May 22, 2023. <a href="https://calscape.org/Wyethia-mollis-(Mule-Ears)?srchcr=sc57ed775d88b0c">https://calscape.org/Wyethia-mollis-(Mule-Ears)?srchcr=sc57ed775d88b0c</a>.</p> <p>David J. Keil. 2012, <i>Wyethia mollis</i>, in Jepson Flora Project (eds.) Jepson eFlora, <a href="https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=5584">https://ucjeps.berkeley.edu/eflora/eflora_display.php?tid=5584</a>. Accessed on May 22, 2023.</p> <p>Flora of North America. n.d. <i>Wyethia mollis</i>. Eflora of North America. <a href="http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=250067823">http://www.efloras.org/florataxon.aspx?flora_id=1&amp;taxon_id=250067823</a>. Accessed May 22, 2023.</p> <p>Lambert, Scott. "Wyethia." In <i>Guidebook to the Seeds of Native and Non-Native Grasses, Forbs, and Shrubs of the Great Basin</i>, 66. Idaho: United States Dept of Interior: Bureau of Land Management, Idaho State Office, 2005. <a href="https://www.blm.gov/sites/default/files/documents/files/Library_Idaho_TechnicalBulletin2005-04.pdf">https://www.blm.gov/sites/default/files/documents/files/Library_Idaho_TechnicalBulletin2005-04.pdf</a>.</p> <p>Natural History Museum of Utah. n.d. <i>Woolly Mule's Ears</i>. University of Utah. <a href="https://nhmu.utah.edu/woolly-mules-ears">https://nhmu.utah.edu/woolly-mules-ears</a>. Accessed 05/22/23.</p> <p>Native Plant Network Propagation Protocol Database– USDA RNGR (2015) Propagation protocol for production of Container (plug) <i>Wyethia mollis</i> plants USDA NRCS - Corvallis Plant Materials Center Corvallis, Oregon. In: Native Plant Network. URL: <a href="https://NativePlantNetwork.org">https://NativePlantNetwork.org</a> (accessed 2023/05/22).</p> <p>Plants for a Future. n.d. <i>Wyethia mollis – Gray</i>. Plants Database. URL: <a href="https://pfaf.org/user/Plant.aspx?LatinName=Wyethia+mollis">https://pfaf.org/user/Plant.aspx?LatinName=Wyethia+mollis</a>. Accessed 05/22/23.</p> <p>Rose, R., Chachulski, C., and Haase, D. (1998) <i>Wyethia amplexicaulis</i> in <i>Propagation of Pacific Northwest Native Plants</i>. 58-59. OSU Press.</p> <p>USDA-NRCS. 2004. <i>Wyethia mollis</i> A. Gray. Plants Database. National Plant Data Center, Baton Rouge, LA. <a href="https://plants.usda.gov/home/plantProfile?symbol=WYMO">https://plants.usda.gov/home/plantProfile?symbol=WYMO</a>. Accessed 05/22/23</p>	

Other Sources Consulted	
<p>Integrated Taxonomic Information System. n.d. <i>Wyethia mollis</i>. Taxonomic Author Search Results.  <a href="https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&amp;search_value=38684#null">https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&amp;search_value=38684#null</a></p> <p>Native American Ethnobotany Database. n.d. <i>Wyethia mollis</i> Gray. n.d..  <a href="http://naeb.brit.org/uses/search/?string=wyethia+mollis">http://naeb.brit.org/uses/search/?string=wyethia+mollis</a> Accessed: 05/22/23</p>	
Protocol Author	Seyyada Burney
Date Protocol Created or Updated	(05/25/23)